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METHOD OF MAKING A CONTAINER

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This invention relates in general to containers, and more particularly relates to plastic containers which are of the thin wall variety, and the materials and methods by which the container is made.

It has long been desired to have an economical plastic container for use with hot beverages, foods, etc. and of the type wherein the user is not subjected to discomfort from heat transfer of a hot beverage disposed within the container.

It is therefore the general object of this invention to provide a plastic container which, when filled with hot beverages, may be readily manually grasped without discomfort to the user while drinking from or carrying the container.

Another object of this invention is to provide an economical plastic container of the aforementioned type which may be stacked and readily dispensed from a vending machine, being comparable in weight to present cup designs.

It is another object of this invention to provide a unitary plastic container which is unaffected by humidity and thus is dimensionally stable for easy vending, is uniform in size when manufactured by mass production techniques, and is otherwise well adapted to be automatically vended from the vending machines now in use.

It is another object of this invention to provide a container as above described which is strong per unit of weight, has no seams to disintegrate when filled with a hot beverage, and has a configuration affording insulating characteristics such that it may be readily held by user when the temperature of the beverages contained therein are well above the temperature that the human hand can normally withstand.

It is a further object of this invention to provide a novel container as set forth above which protects table surfaces, etc. from heat transfer, and additionally, the very low moisture vapor transmission of the material protects the table surface, etc. from marking by the beverages contained therewithin.

Another object of this invention is to provide a container comparable in weight to containers heretofore known, but wherein the formed material affords a greatly increased apparent thickness of the container to thereby insulate the user from the temperature of the contents in the container.

Another object of the invention is to provide a container as aforedescribed which is made of similar base material to prior art containers but, due to configuration of materials, is stronger per unit of weight than containers known heretofore.

It is a further object of this invention to premold the web stock normally used in molding the containers whereby the apparent thickness of the material is increased without increasing the weight or the amount of material that is used.

It is a further object of this invention to provide a container forming method wherein the material is pre-molded

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and of such characteristics that the scrap from the molding machine may be readily reground and reconstituted for re-use in the molding machine without expensive degassing techniques.

Another object of this invention is to provide a novel material which is pre-molded into a preselected configuration prior to being fed into a container molding machine such that a structurally strong article of manufacture is obtained in the final molding process without loss of identity of the pre-molded configuration.

Other objects and advantages of the present invention will appear from the following description in the accompanying drawings wherein:

FIG. 1 is a fragmentary perspective view of a portion of the apparatus and materials being made by the process shown in FIG. 2;

FIG. 1a is a fragmentary sectional view of the material shown in FIG. 1;

FIG. 2 is a semi-diagrammatic showing of the components of apparatus used in manufacturing the materials shown in FIG. 1;

FIG. 3 is an isometric perspective view of the continuous molding roll used in the apparatus shown in FIG. 2;

FIG. 4 is an enlarged fragmentary sectional view of a portion of the roll shown in FIG. 3;

FIG. 5 is an isometric perspective view, a portion being in section, illustrating somewhat diagrammatically a container embodying principles of this invention;

FIG. 6 is a side view of the container shown in FIG. 5;

FIG. 7 is a bottom view of the container shown in FIG. 6;

FIG. 8 is an enlarged fragmentary sectional view of the upper portion of a container such as shown in FIG. 5 when made of the materials shown in FIG. 9;

FIG. 9 is a fragmentary isometric perspective view of the material used in making the container shown in FIG. 8;

FIG. 10 is a view similar to FIG. 8 when utilizing the materials shown in FIG. 11;

FIG. 11 is a fragmentary isometric perspective view of the material used in manufacturing the article shown in FIG. 10;

FIG. 12 is an isometric perspective view of an alternate type of material being manufactured by the general process shown in FIG. 2;

FIG. 13 is a view similar to FIG. 12 of still another type of material usable in making containers embodying the inventive concepts;

FIG. 14 is a semi-diagrammatic isometric perspective view, a portion being in section, indicating diagrammatically the form of a container that is obtained when the material shown in FIG. 12 is used;

FIG. 15 is a fragmentary sectional view of an upper portion of the container shown in FIG. 14 when a portion of the material shown in FIG. 12 is used in a non-laminated form;

FIG. 16 is a view similar to FIG. 15 showing the upper portion of the container when a laminated material such as shown in FIG. 12 is utilized;

FIG. 17 is a semi-diagrammatic view of the apparatus utilized in the preferred method of molding containers from the materials shown in the earlier figures; and

FIG. 18 is a fragmentary enlarged cross-sectional view